

# Hampden County Regional Retirement System

Actuarial Valuation and Review as of  
January 1, 2014





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*September 26, 2014*

*Board of Trustees*

*Hampden County Regional Retirement System*

*67 Hunt Street, Suite 106*

*Agawam, MA 01001*

*Dear Board Members:*

*We are pleased to submit this Actuarial Valuation and Review as of January 1, 2014. It summarizes the actuarial data used in the valuation, establishes the funding requirements for fiscal 2015 and later years and analyzes the preceding two years' experience.*

*This report was prepared in accordance with generally accepted actuarial principles and practices at the request of the Board to assist in administering the Retirement System. The census information and financial information on which our calculations were based was prepared by the staff of the Hampden County Regional Retirement System. That assistance is gratefully acknowledged.*

*The measurements shown in this actuarial valuation may not be applicable for other purposes. Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period); and changes in plan provisions or applicable law.*


*The actuarial calculations were directed under my supervision. I am a member of the American Academy of Actuaries and I meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinion herein. To the best of my knowledge, the information supplied in the actuarial valuation is complete and accurate. Further, in my opinion, the assumptions as approved by the Board are reasonably related to the experience of and the expectations for the Plan.*

*We look forward to reviewing this report at your next meeting and to answering any questions.*

*Sincerely,*

*Segal Consulting, a Member of The Segal Group, Inc.*

By:

  
Kathleen A. Riley, FSA, MAAA, EA  
Senior Vice President and Actuary

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## SECTION 1: Valuation Summary for the Hampden County Regional Retirement System

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### Purpose

This report has been prepared by Segal Consulting to present a valuation of the Hampden County Regional Retirement System as of January 1, 2014. The valuation was performed to determine whether the assets and contributions are sufficient to provide the prescribed benefits. The contribution requirements presented in this report are based on:

- The benefit provisions of M.G.L. Chapter 32;
- The characteristics of covered active participants, inactive participants, and retired participants and beneficiaries as of January 1, 2014;
- The assets of the Plan as of December 31, 2013;
- Economic assumptions regarding future salary increases and investment earnings; and
- Other actuarial assumptions, regarding employee terminations, retirement, death, etc.

### Significant Issues in Valuation Year

The following key findings were the result of this actuarial valuation:

1. The actuarial valuation report as of January 1, 2014 is based on financial information as of that date. Changes in the value of assets subsequent to that date are not reflected.
2. During the plan years ended 2012 and 2013, the market value rates of return were 12.51% and 13.81%, respectively, compared to the assumed rate of return of 8.00%. Because the actuarial value of assets gradually recognizes market value fluctuations over a five-year period, the actuarial rates of return for the plan years ended 2012 and 2013 were 1.71% and 10.21%, respectively. The actuarial value of assets as of December 31, 2013 was \$266.9 million, or 95.6% of the market value of assets of \$279.3 million reported in the Annual Statement. For the two-year period ending December 31, 2013, there was an investment loss on an actuarial basis of \$11.1 million. As of December 31, 2011, the actuarial value of assets was 109.2% of the market value.
3. As indicated in Section 2, Subsection B of this report, the total unrecognized investment gain as of December 31, 2013 is \$12.4 million. This investment gain will be recognized in the determination of the actuarial value of assets for funding purposes in the next few years, to the extent it is not offset by recognition of investment losses derived from future experience. This implies that earning the assumed rate of investment return on a market value basis will result in investment gains on the actuarial value of assets in the next few years.

## SECTION 1: Valuation Summary for the Hampden County Regional Retirement System

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4. This valuation reflects the following changes in actuarial assumptions and methods:
- The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.
  - The investment return assumption was lowered from 8.00% to 7.875%.
  - The salary increase assumption was revised from level rates of 4.50% per year for all members to rates based on years of service with ultimate rates of 4.25% per year for Group 1 members, 4.5% per year for Group 2 members and 4.75% per year for Group 4 members.
  - The mortality assumption for non-disabled participants was changed from the RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table projected 20 years using Scale AA.
  - The mortality assumption for disabled participants was changed from the RP-2000 Combined Healthy Mortality Table set forward two years to the RP-2000 Combined Healthy Mortality Table set forward three years projected 20 years with Scale AA.
  - The assumed retirement age for inactive vested participants hired prior to April 2, 2012 was changed from age 65 to age 60 for Group 1 and 2 members and remained the same at age 55 for Group 4 members hired prior to April 2, 2012. For participants hired April 2, 2012 or later, the assumption is 60 for Group 1, 55 for Group 2, and 50 for Group 4.
  - The administrative expense assumption was increased from \$550,000 for calendar 2012 to \$675,000 for calendar 2014.

Changing these assumptions resulted in a net increase in the unfunded actuarial accrued liability of \$18.0 million and a net increase in the employer normal cost of \$96,000.

5. The following plan change is included this valuation:
- Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.

## SECTION 1: Valuation Summary for the Hampden County Regional Retirement System

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6. The unfunded liability was expected to increase from \$255.0 million as of January 1, 2012 to \$269.9 million as of January 1, 2014. The actual unfunded liability of \$298.6 million is \$28.7 million higher than expected primarily due to the investment losses on an actuarial basis, fewer deaths than expected amongst retired participants, net 3(8)(c) payments, and the changes in assumptions noted above, partially offset by an experience gain due to salary increases less than expected.
7. The recommended contribution for fiscal 2015 is equal to the previously budgeted amount of \$21,373,733. The results of this valuation will first be reflected in the fiscal 2016 appropriation. We have prepared two funding schedules for the Board to review. The funding schedule in Section 2 Chart 16 fully funds the Retirement System by June 30, 2036 with amortization payments increasing 4.0% per year and an 8.0% cap on the increase in the appropriation. The appropriation increases 8.0% per year through June 30, 2021, 6.01% the following year, and 4.0% per year thereafter. The funding schedule in Section 2 Chart 17 fully funds the Retirement System by June 30, 2035 with amortization payments increasing 4.0% per year and an 8.0% cap on the increase in the appropriation. The appropriation increases 8.0% per year through June 30, 2022, 6.73% the following year, and 4.0% per year thereafter. The prior funding schedule fully funded the System by June 30, 2036 with 8.0% increases in the appropriation through June 30, 2022.

## SECTION 1: Valuation Summary for the Hampden County Regional Retirement System

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### Summary of Key Valuation Results

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	2014	2012
<b>Contributions for plan year beginning January 1:</b>		
Recommended for fiscal 2015 and 2013	\$21,373,733	\$18,324,531
Recommended for fiscal 2016 and 2014	23,083,632	19,790,493
Recommended for fiscal 2017 and 2015	24,930,322	21,373,733
<b>Funding elements for plan year beginning January 1:</b>		
Normal cost, including administrative expenses	\$14,128,422	\$13,603,125
Market value of assets	279,338,628	223,588,277
Actuarial value of assets	266,930,021	244,053,652
Actuarial accrued liability	565,522,818	499,009,329
Unfunded actuarial accrued liability	298,592,797	254,955,677
<b>Demographic data for plan year beginning January 1:</b>		
Number of retired participants and beneficiaries	1,581	1,538
Number of inactive participants entitled to a return of their employee contributions	349	321
Number of inactive participants with a vested right to a deferred or immediate benefit	64	82
Number of active participants	2,553	2,568
Total payroll	\$95,793,669	\$89,988,079
Average payroll	37,522	35,042

## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

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### A. PARTICIPANT DATA

The Actuarial Valuation and Review considers the number and demographic characteristics of covered participants, including active participants, inactive participants, retired participants and beneficiaries.

This section presents a summary of significant statistical data on these participant groups.

More detailed information for this valuation year and the preceding valuation can be found in Section 3, Exhibits A and B.

*A historical perspective of how the participant population has changed over the past five valuations can be seen in this chart.*

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#### CHART 1

##### Participant Population: 2006 – 2013

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Year Ended December 31	Active Participants	Inactive Participants	Retired Participants and Beneficiaries
2006	2,590	509	1,467
2007	2,681	523	1,461
2009	2,589	524	1,494
2011	2,568	403	1,538
2013	2,553	413	1,581

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## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

### Active Participants

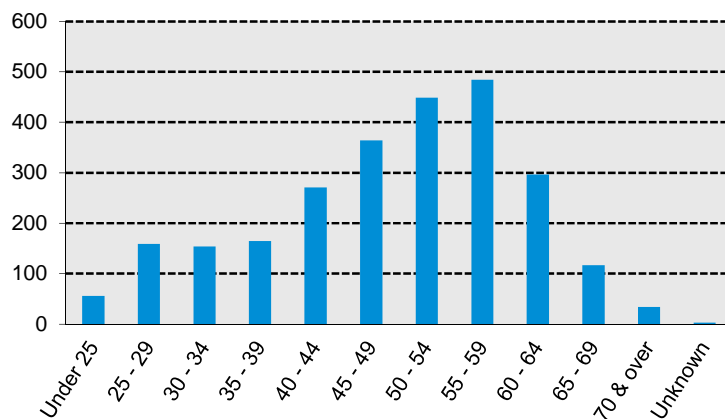
Plan costs are affected by the age, years of service and payroll of active participants. In this year's valuation, there were 2,553 active participants with an average age of 49.4, average years of service of 12.4 years and average payroll of \$37,522. The 2,568 active participants in the prior valuation had an average age of 49.1, average service of 12.2 years and average payroll of \$35,042.

Among the active participants, there were three participants with unknown age and/or service information. The actuarial calculations were adjusted for the missing information by assuming that it was the same as information provided for other active participants with similar known characteristics.

*These graphs show a distribution of active participants by age and by years of service.*

**CHART 2**

**Distribution of Active Participants by Age as of December 31, 2013**

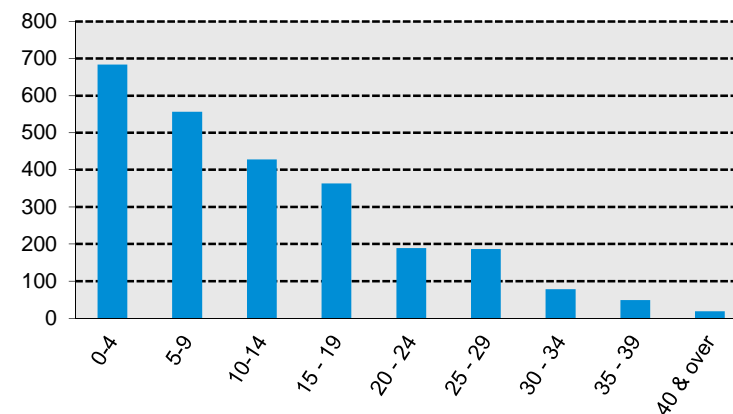


### Inactive Participants

In this year's valuation, there were 64 participants with a vested right to a deferred or immediate vested benefit and 349 participants entitled to a return of their employee contributions.

**CHART 3**

**Distribution of Active Participants by Years of Service as of December 31, 2013**



## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

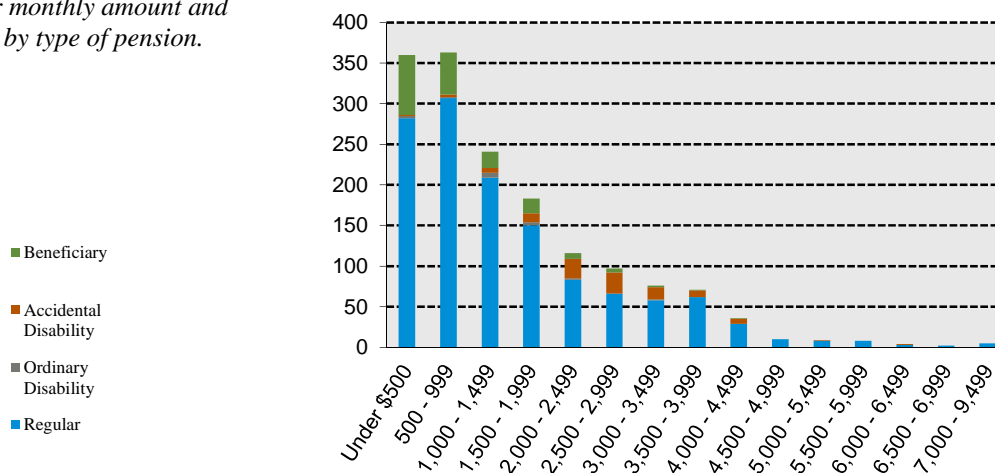
### Retired Participants and Beneficiaries

As of December 31, 2013, 1,401 retired participants and 180 beneficiaries were receiving total monthly benefits of \$2,391,036, excluding COLAs reimbursed by the Commonwealth. For comparison, in the previous valuation, there were 1,355 retired participants and 183 beneficiaries receiving monthly benefits of \$2,170,157, excluding COLAs reimbursed by the Commonwealth.

*These graphs show a distribution of the current retired participants and beneficiaries based on their monthly amount and age, by type of pension.*

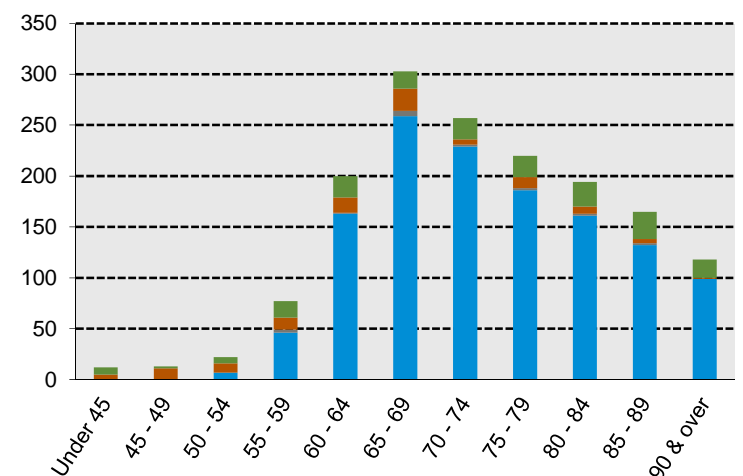
**CHART 4**

**Distribution of Retired Participants and Beneficiaries by Type and by Monthly Amount as of December 31, 2013**



**CHART 5**

**Distribution of Retired Participants and Beneficiaries by Type and by Age as of December 31, 2013**



## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

### B. FINANCIAL INFORMATION

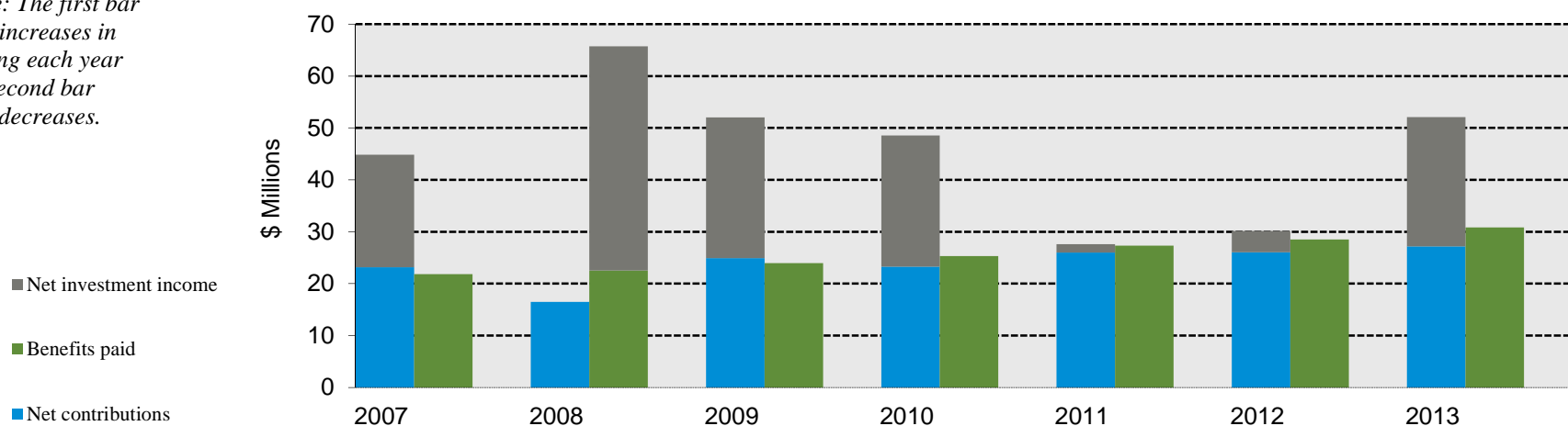
Retirement plan funding anticipates that, over the long term, both contributions (less administrative expenses) and net investment earnings (less investment fees) will be needed to cover benefit payments.

Retirement plan assets change as a result of the net impact of these income and expense components. Additional financial information, including a summary of these transactions for the valuation year, is presented in Section 3, Exhibits C and D.

*The chart depicts the components of changes in the actuarial value of assets over the last seven years. Note: The first bar represents increases in assets during each year while the second bar details the decreases.*

**CHART 6**

**Comparison of Increases and Decreases in the Actuarial Value of Assets for Years Ended December 31, 2007 – 2013**



## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

It is desirable to have level and predictable plan costs from one year to the next. For this reason, the Board has approved an asset valuation method that gradually adjusts to market value. Under this valuation method, the full value of market fluctuations is not recognized in a single year and, as a result, the asset value and the plan costs are more stable.

The amount of the adjustment to recognize market value is treated as income, which may be positive or negative. Realized and unrealized gains and losses are treated equally and, therefore, the sale of assets has no immediate effect on the actuarial value.

*The chart shows the determination of the actuarial value of assets as of the valuation date.*

### CHART 7

#### Determination of Actuarial Value of Assets

	Year Ended	
	December 31, 2013	December 31, 2012
1. Market value of assets, December 31, 2013	\$279,338,628	\$248,891,214
2. Calculation of unrecognized return*	Original <u>Amount</u>	Unrecognized <u>Return</u>
(a) Year ended December 31, 2013	\$14,345,683	\$11,476,547
(b) Year ended December 31, 2012	10,018,797	6,011,278
(c) Year ended December 31, 2011	-16,984,874	-6,793,950
(d) Year ended December 31, 2010	8,573,660	1,714,732
(e) Year ended December 31, 2009	9,670,923	0
(f) Total unrecognized return	12,408,607	3,187,762
3. Preliminary actuarial value: (1) - (2f)	266,930,021	245,703,452
4. Adjustment to be within 10% corridor	0	0
5. Final actuarial value of assets as of December 31, 2013: (3) + (4)	<u>\$266,930,021</u>	<u>\$245,703,452</u>
6. Actuarial value as a percentage of market value: (5) ÷ (1)	95.6%	98.7%
7. Amount deferred for future recognition: (1) - (5)	12,408,607	\$3,187,762

*\*Unrecognized return is the difference between total return and the expected return on a market value basis and is recognized over a five-year period.*

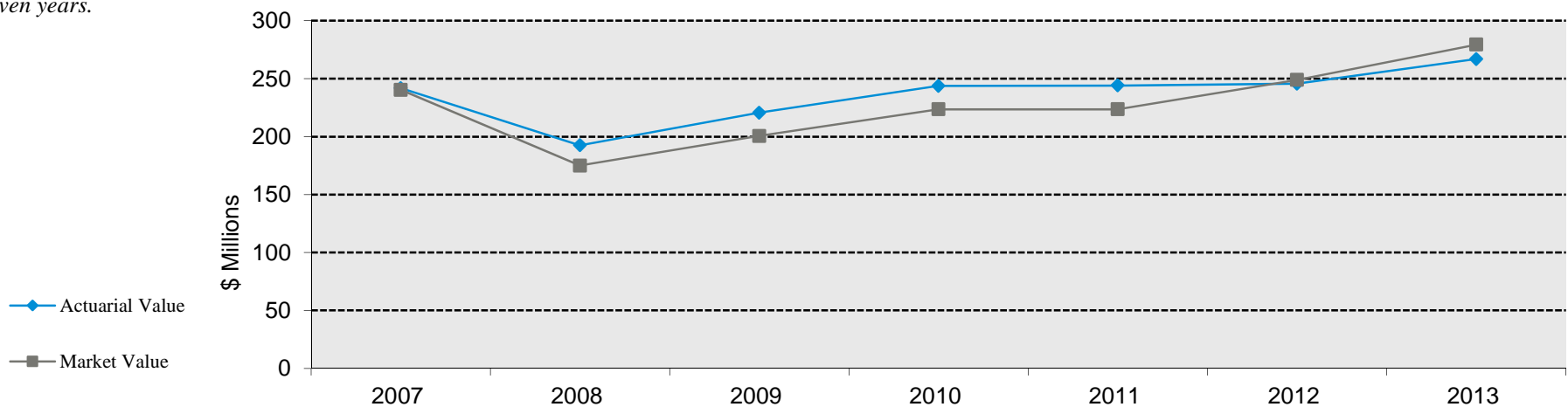
## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

Both the actuarial value and market value of assets are representations of the Hampden County Regional Retirement System's financial status. As investment gains and losses are gradually taken into account, the actuarial value of assets tracks the market value of assets. The actuarial asset value is significant because the Hampden County Regional Retirement System's liabilities are compared to these assets to determine what portion, if any, remains unfunded. Amortization of the unfunded actuarial accrued liability is an important element in determining the contribution requirement.

*This chart shows the change in the actuarial value of assets versus the market value over the past seven years.*

**CHART 8**

**Actuarial Value of Assets vs. Market Value of Assets as of December 31, 2007 – 2013**



## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

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### C. ACTUARIAL EXPERIENCE

To calculate the required contribution, assumptions are made about future events that affect the amount and timing of benefits to be paid and assets to be accumulated. Each year actual experience is measured against the assumptions. If overall experience is more favorable than anticipated (an actuarial gain), the contribution requirement will decrease from the previous year. On the other hand, the contribution requirement will increase if overall actuarial experience is less favorable than expected (an actuarial loss).

Taking account of experience gains or losses in one year without making a change in assumptions reflects the belief that the single year's experience was a short-term development and that, over the long term, experience will return to the original assumptions. For contribution requirements to remain stable, assumptions should approximate experience.

If assumptions are changed, the contribution requirement is adjusted to take into account a change in experience anticipated for all future years.

The total experience loss for the two-year period ending December 31, 2013 is \$10,634,608, as shown in Chart 9. A discussion of the major components of the actuarial experience is on the following pages.

*This chart provides a summary of the actuarial experience over the past two years.*

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### CHART 9

#### Actuarial Experience for Two-Year Period Ended December 31, 2013

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1. Net loss from investments*	-\$11,113,438
2. Net loss from administrative expenses	-136,507
3. Net gain from other experience**	<u>615,337</u>
4. Net experience loss: (1) + (2) + (3)	-\$10,634,608

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\* Details in Chart 10.

\*\* Details in Chart 13.

## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

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### Investment Rate of Return

A major component of projected asset growth is the assumed rate of return. The assumed return should represent the expected long-term rate of return, based on the Hampden County Regional Retirement System's investment policy. For valuation purposes, the assumed rate of return on the actuarial value of assets is 8.00% for 2013 and 2012. The actual rate of return on an actuarial basis for the 2013 plan year was 10.21% and 1.71% for the 2012 year.

Over the two-year period ending December 31, 2013, the Hampden County Regional Retirement System experienced an actuarial loss of \$11,113,438 (including an adjustment for interest) with regard to its investments.

*This chart shows the gain/(loss) due to investment experience.*

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### CHART 10 Actuarial Value Investment Experience

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	Year Ended	
	December 31, 2013	December 31, 2012
1. Actual return	\$24,889,613	\$4,152,610
2. Average value of assets	243,871,930	242,802,247
3. Actual rate of return: (1) ÷ (2)	10.21%	1.71%
4. Assumed rate of return	8.00%	8.00%
5. Expected return: (2) x (4)	\$19,509,755	\$19,424,180
6. Actuarial gain/(loss): (1) – (5)	<u>\$5,379,858</u>	<u>-\$15,271,570</u>

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## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

Because actuarial planning is long term, it is useful to see how the assumed investment rate of return has followed actual experience over time. The chart below shows the rate of return on an actuarial basis compared to the market value investment return for the last seven years, including five-year and seven-year averages.

Based upon this experience and future expectations, we have lowered the assumed rate of return from 8.00% to 7.875%.

### CHART 11

#### Investment Return – Actuarial Value vs. Market Value: 2007 - 2013

Year Ended December 31	Actuarial Value Investment Return		Market Value Investment Return	
	Amount	Percent	Amount	Percent
2007	\$21,673,615	9.88%	\$18,762,540	8.49%
2008	-43,200,913	-18.09	-59,276,841	-24.98
2009	27,137,711	14.06	24,587,312	14.01
2010	25,217,369	11.48	25,034,119	12.55
2011	1,630,346	0.67	1,401,479	0.63
2012	4,152,610	1.71	27,805,747	12.51
2013	<u>24,889,613</u>	10.21	<u>34,110,458</u>	13.81
Total	\$61,500,351		\$72,424,814	
	Five-year average return	7.27%		10.58%
	Seven-year average return	3.84%		4.75%

*Note: Each year's yield is weighted by the average asset value in that year.*

## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

Subsection B described the actuarial asset valuation method that gradually takes into account fluctuations in the market value rate of return. The effect of this is to stabilize the actuarial rate of return, which contributes to leveling pension plan costs.

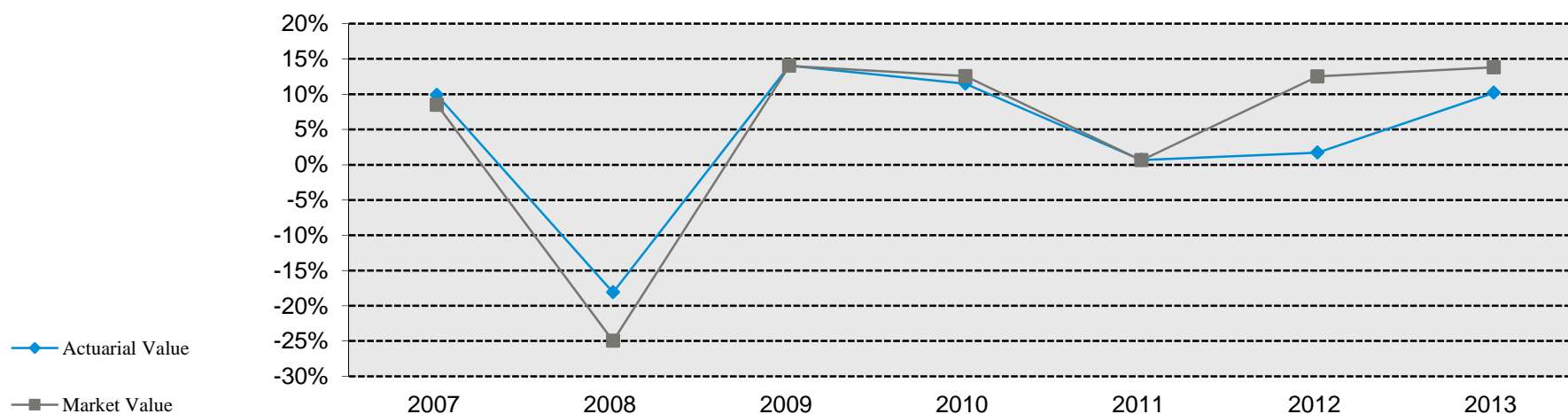
### Administrative Expenses

Administrative expenses for the years ended December 31, 2012 and 2013 totaled \$635,324 and \$668,761, respectively, compared to the assumption of \$550,000 for calendar year 2012 and \$574,750 for calendar year 2013. This resulted in a loss of \$136,507 over a two-year period, including an adjustment for interest. We have increased the assumption to \$675,000 for calendar year 2014.

*This chart illustrates how this leveling effect has actually worked over the years 2007 - 2013.*

**CHART 12**

**Market and Actuarial Rates of Return for Years Ended December 31, 2007 - 2013**



## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

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### Other Experience

There are other differences between the expected and the actual experience that appear when the new valuation is compared with the projections from the previous valuation. These include:

- the extent of turnover among the participants,
- retirement experience (earlier or later than expected),
- mortality (more or fewer deaths than expected),
- the number of disability retirements, and
- salary increases different than assumed.

The net gain from this other experience for the two-year period ending December 31, 2013 amounted to \$615,337, which is 0.1% of the actuarial accrued liability.

A brief summary of the demographic gain/(loss) experience of the Hampden County Regional Retirement System for the two-year period ending December 31, 2013 is shown in the chart below.

This valuation reflects the following changes in actuarial

assumptions and methods:

- The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.
- The investment return assumption was lowered from 8.00% to 7.875%.
- The salary increase assumption was revised from level rates of 4.50% per year for all members to rates based on years of service with ultimate rates of 4.25% per year for Group 1 members, 4.5% per year for Group 2 members and 4.75% per year for Group 4 members.
- The mortality assumption for non-disabled participants was changed from the RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table projected 20 years using Scale AA.

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### CHART 13

#### Experience Due to Changes in Demographics for Two-Year Period Ended December 31, 2013

1. Salary increases for continuing actives less than expected	\$7,590,666
2. Loss from net 3(8)(c) reimbursements	-3,107,223
3. Fewer deaths than expected amongst retired members and beneficiaries	-2,006,027
4. Miscellaneous experience loss (primarily due to transfer in of employees with service from another retirement system and changes in reported service)	<u>-1,862,079</u>
5. Total	\$615,337

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*The chart shows elements of the experience gain/(loss) for the most recent years.*

## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

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- The mortality assumption for disabled participants was changed from the RP-2000 Combined Healthy Mortality Table set forward two years to the RP-2000 Combined Healthy Mortality Table set forward three years projected 20 years with Scale AA.
- The assumed retirement age for inactive vested participants hired prior to April 2, 2012 was changed from age 65 to age 60 for Group 1 and 2 members and remained the same at age 55 for Group 4 members hired prior to April 2, 2012. For participants hired April 2, 2012 or later, the assumption is 60 for Group 1, 55 for Group 2, and 50 for Group 4.

- The administrative expense assumption was increased from \$550,000 for calendar 2012 to \$675,000 for calendar 2014.

Changing these assumptions resulted in a net increase in the unfunded actuarial accrued liability of \$18.0 million and a net increase in the employer normal cost of \$65,000.

The following plan change is included this valuation:

- Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.

## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

Chart 14 below provides a reconciliation of the unfunded liability from the prior valuation to the current valuation.

The unfunded liability was expected to increase from \$255.0 million as of January 1, 2012 to \$269.9 million as of January 1, 2014. The actuarial unfunded liability as of January 1, 2014 of \$298.6 million is \$28.7 million higher than expected as detailed in Chart 14 below.

### CHART 14

#### Development of Unfunded Actuarial Accrued Liability and (Gain)/Loss

	Year Ended	
	December 31, 2013	December 31, 2012
1. Unfunded actuarial accrued liability at beginning of year	\$262,424,662	\$254,955,677
2. Normal cost at beginning of year	14,215,266	13,603,125
3. Total contributions	-27,853,664	-26,655,072
4. Interest		
(a) For whole year on (1) + (2)	\$22,131,194	\$21,484,704
(b) For half year on (3)	<u>-1,007,111</u>	<u>-963,772</u>
(c) Total interest	<u>21,124,083</u>	<u>20,520,932</u>
5. Expected unfunded actuarial accrued liability	\$269,910,347	\$262,424,662
6. Changes due to:		
(a) Experience loss	\$10,634,608	--
(b) Assumption changes	<u>18,047,842</u>	--
(c) Total changes	<u>28,682,450</u>	--
7. Unfunded actuarial accrued liability at end of year	<u>\$298,592,797</u>	--

## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

### D. RECOMMENDED CONTRIBUTION

The amount of annual contribution required to fund the Plan is comprised of an employer normal cost payment and a payment on the unfunded actuarial accrued liability.

The recommended contribution for fiscal 2015 is equal to the previously budgeted amount of \$21,373,733. The results of this valuation will first be reflected in the fiscal 2016 appropriation. We have prepared two funding schedules for the Board to review. The funding schedule in Chart 16 fully funds the Retirement System by June 30, 2036 with amortization payments increasing 4.0% per year and an 8.0% cap on the increase in the appropriation. The

appropriation increases 8.0% per year through June 30, 2021, 6.01% the following year, and 4.0% per year thereafter. The funding schedule in Chart 17 fully funds the Retirement System by June 30, 2035 with amortization payments increasing 4.0% per year and an 8.0% cap on the increase in the appropriation. The appropriation increases 8.0% per year through June 30, 2022, 6.73% the following year, and 4.0% per year thereafter. The prior funding schedule fully funded the System by June 30, 2036 with 8.0% increases in the appropriation through June 30, 2022.

*The chart compares this valuation's recommended contribution with the prior valuation.*

### CHART 15

#### Recommended Contribution

	Year Beginning January 1			
	2014		2012	
	Amount	% of Payroll	Amount	% of Payroll
1. Total normal cost	\$13,453,422	13.44%	\$13,053,125	13.88%
2. Administrative expenses	675,000	0.67%	550,000	0.58%
3. Expected employee contributions	<u>-8,955,480</u>	<u>-8.95%</u>	<u>-8,535,148</u>	<u>-9.08%</u>
4. Employer normal cost: (1) + (2) + (3)	\$5,172,942	5.17%	\$5,067,977	5.39%
5. Actuarial accrued liability	565,522,818		499,009,329	
6. Actuarial value of assets	<u>266,930,021</u>		<u>244,053,652</u>	
7. Unfunded actuarial accrued liability: (5) - (6)	\$298,592,797		\$254,955,677	
8. Employer normal cost projected to July 1, 2014 and 2012, respectively, adjusted for timing	5,376,312	5.27%	5,281,396	5.49%
9. Projected of unfunded actuarial accrued liability	310,127,109		264,957,711	
10. Payment on projected unfunded actuarial accrued liability, adjusted for timing	15,997,421	15.67%	13,043,135	13.57%
11. Total recommended contribution: (8) + (10), adjusted for timing	<u>\$21,373,733</u>	<u>20.94%</u>	<u>\$18,324,531</u>	<u>19.06%</u>
12. Projected payroll	\$102,059,180		\$96,130,105	

*Note: Recommended contributions are assumed to be paid on July 1 and December 31.*

## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

### CHART 16

Fully funded by 2036 with appropriations increasing 8.0% per year for six years, 6.0% for one year and 4.0% per year thereafter

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of 2002 ERI Liability	(4) Amortization of 2003 ERI Liability	(5) Amortization of Funding Holiday Liability	(6) Amortization of Remaining Liability	(7) Total Plan Cost: (2) + (3) + (4) + (5) + (6)	(8) Total Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(9) Total Plan Cost: % Increase
2015	\$5,376,312	\$141,685	\$70,945	\$33,492	\$15,751,299	\$21,373,733	\$310,127,109	- -
2016	5,591,365	141,685	70,945	33,492	17,246,145	23,083,632	317,616,360	8.00%
2017	5,815,020	141,685	70,945	33,492	18,869,181	24,930,322	324,113,094	8.00%
2018	6,047,621	141,685	70,945	33,492	20,631,006	26,924,748	329,403,464	8.00%
2019	6,289,526	141,685	70,945	33,492	22,543,080	29,078,728	333,245,561	8.00%
2020	6,541,107	- -	70,945	33,492	24,759,482	31,405,026	335,366,292	8.00%
2021	6,802,751	- -	- -	- -	27,114,677	33,917,428	335,457,944	8.00%
2022	7,074,861	- -	- -	- -	28,880,979	35,955,840	333,174,388	6.01%
2023	7,357,855	- -	- -	- -	30,036,219	37,394,074	328,841,372	4.00%
2024	7,652,169	- -	- -	- -	31,237,667	38,889,836	322,944,311	4.00%
2025	7,958,256	- -	- -	- -	32,487,174	40,445,430	315,311,124	4.00%
2026	8,276,586	- -	- -	- -	33,786,661	42,063,247	305,754,222	4.00%
2027	8,607,649	- -	- -	- -	35,138,127	43,745,776	294,069,207	4.00%
2028	8,951,955	- -	- -	- -	36,543,652	45,495,607	280,033,471	4.00%
2029	9,310,033	- -	- -	- -	38,005,399	47,315,432	263,404,674	4.00%
2030	9,682,434	- -	- -	- -	39,525,614	49,208,048	243,919,101	4.00%
2031	10,069,731	- -	- -	- -	41,106,639	51,176,370	221,289,892	4.00%
2032	10,472,520	- -	- -	- -	42,750,905	53,223,425	195,205,119	4.00%
2033	10,891,421	- -	- -	- -	44,460,941	55,352,362	165,325,716	4.00%
2034	11,327,078	- -	- -	- -	46,239,378	57,566,456	131,283,238	4.00%
2035	11,780,161	- -	- -	- -	48,088,953	59,869,114	92,677,440	4.00%
2036	12,251,367	- -	- -	- -	50,012,511	62,263,878	49,073,661	4.00%
2037	12,741,422	- -	- -	- -	- -	12,741,422	- -	-79.54%

Notes: Recommended contributions are assumed to be paid on July 1 and December 31.

Items (2) and (6) increase at 4.0% per year.

Assumes contribution of budgeted amount for fiscal 2015.

Maximum increase in the appropriation from one fiscal year to the next is 8%.

Projected normal cost does not reflect the future impact of pension reform for future hires.

## SECTION 2: Valuation Results for the Hampden County Regional Retirement System

### CHART 17

Fully funded by 2035 with appropriations increasing 8.0% per year for seven years, 6.73% for one year and 4.0% per year thereafter

(1) Fiscal Year Ended June 30	(2) Employer Normal Cost	(3) Amortization of 2002 ERI Liability	(4) Amortization of 2003 ERI Liability	(5) Amortization of Funding Holiday Liability	(6) Amortization of Remaining Liability	(7) Total Plan Cost: (2) + (3) + (4) + (5) + (6)	(8) Total Unfunded Actuarial Accrued Liability at Beginning of Fiscal Year	(9) Total Plan Cost: % Increase
2015	\$5,376,312	\$141,685	\$70,945	\$33,492	\$15,751,299	\$21,373,733	\$310,127,109	- -
2016	5,591,365	141,685	70,945	33,492	17,246,145	23,083,632	317,616,360	8.00%
2017	5,815,020	141,685	70,945	33,492	18,869,181	24,930,322	324,113,094	8.00%
2018	6,047,621	141,685	70,945	33,492	20,631,006	26,924,748	329,403,464	8.00%
2019	6,289,526	141,685	70,945	33,492	22,543,080	29,078,728	333,245,561	8.00%
2020	6,541,107	- -	70,945	33,492	24,759,482	31,405,026	335,366,292	8.00%
2021	6,802,751	- -	- -	- -	27,114,677	33,917,428	335,457,944	8.00%
2022	7,074,861	- -	- -	- -	29,555,961	36,630,822	333,174,388	8.00%
2023	7,357,855	- -	- -	- -	31,738,968	39,096,823	328,126,904	6.73%
2024	7,652,169	- -	- -	- -	33,008,526	40,660,695	320,371,220	4.00%
2025	7,958,256	- -	- -	- -	34,328,867	42,287,123	310,660,949	4.00%
2026	8,276,586	- -	- -	- -	35,702,022	43,978,608	298,788,414	4.00%
2027	8,607,649	- -	- -	- -	37,130,103	45,737,752	284,527,433	4.00%
2028	8,951,955	- -	- -	- -	38,615,307	47,567,262	267,631,778	4.00%
2029	9,310,033	- -	- -	- -	40,159,919	49,469,952	247,833,502	4.00%
2030	9,682,434	- -	- -	- -	41,766,316	51,448,750	224,841,141	4.00%
2031	10,069,731	- -	- -	- -	43,436,969	53,506,700	198,337,761	4.00%
2032	10,472,520	- -	- -	- -	45,174,448	55,646,968	167,978,855	4.00%
2033	10,891,421	- -	- -	- -	46,981,425	57,872,846	133,390,065	4.00%
2034	11,327,078	- -	- -	- -	48,860,682	60,187,760	94,164,723	4.00%
2035	11,780,161	- -	- -	- -	50,815,110	62,595,271	49,861,193	4.00%
2036	12,251,367	- -	- -	- -	- -	12,251,367	- -	-80.43%
2037	12,741,422	- -	- -	- -	- -	12,741,422	- -	4.00%

Notes: Recommended contributions are assumed to be paid on July 1 and December 31.

Items (2) and (6) increase at 4.0% per year.

Assumes contribution of budgeted amount for fiscal 2015.

Maximum increase in the appropriation from one fiscal year to the next is 8%.

Projected normal cost does not reflect the future impact of pension reform for future hires.

### SECTION 3: Supplemental Information for the Hampden County Regional Retirement System

#### EXHIBIT A

#### Table of Plan Coverage

Category	Year Ended December 31		Change From Prior Year
	2013	2011	
<b>Active participants in valuation:</b>			
Number	2,553	2,568	-0.6%
Average age	49.4	49.1	N/A
Average years of service	12.4	12.2	N/A
Total payroll*	\$95,793,669	\$89,988,079	6.5%
Average payroll*	37,522	35,042	7.1%
Member contributions	88,074,094	80,767,369	9.0%
<b>Inactive participants with a vested right to a deferred or immediate benefit</b>	64	82	-22.0%
<b>Inactive participants entitled to a return of their employee contributions</b>	349	321	8.7%
<b>Retired participants:</b>			
Number in pay status	1,282	1,237	3.6%
Average age	74.2	74.1	N/A
Average monthly benefit	\$1,513	\$1,398	8.2%
<b>Disabled participants:</b>			
Number in pay status	119	118	0.8%
Average age	64.9	63.9	N/A
Average monthly benefit	\$2,457	\$2,365	3.9%
<b>Beneficiaries in pay status:</b>			
Number in pay status	180	183	-1.6%
Average age	72.8	73.2	N/A
Average monthly benefit	\$884	\$885	-0.1%

\* Payroll figures are for the prior calendar year.

### SECTION 3: Supplemental Information for the Hampden County Regional Retirement System

#### EXHIBIT B

#### Participants in Active Service as of December 31, 2013 By Age, Years of Service, and Average Payroll

Age	Years of Service									
	Total	0-4	5-9	10-14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39	40 & over
Under 25	56	55	1	--	--	--	--	--	--	--
	\$25,701	\$25,367	\$44,084	--	--	--	--	--	--	--
25 - 29	159	131	26	2	--	--	--	--	--	--
	\$34,254	\$33,292	\$38,773	\$38,503	--	--	--	--	--	--
30 - 34	154	72	60	20	2	--	--	--	--	--
	\$40,368	\$30,370	\$48,342	\$51,489	\$49,864	--	--	--	--	--
35 - 39	165	51	51	35	25	2	1	--	--	--
	\$43,362	\$30,109	\$39,458	\$51,522	\$64,484	\$64,097	\$63,254	--	--	--
40 - 44	271	93	77	41	44	15	1	--	--	--
	\$39,178	\$25,471	\$36,324	\$44,729	\$59,846	\$60,888	\$71,229	--	--	--
45 - 49	364	102	98	63	44	25	24	7	1	--
	\$37,254	\$25,352	\$30,602	\$34,924	\$54,527	\$56,098	\$60,317	\$62,871	\$86,008	--
50 - 54	449	76	106	86	68	38	46	27	2	--
	\$38,069	\$26,017	\$26,969	\$36,314	\$35,670	\$52,922	\$59,269	\$69,336	\$49,346	--
55 - 59	484	65	74	100	95	46	46	28	26	4
	\$36,484	\$29,262	\$29,354	\$30,079	\$33,120	\$33,915	\$46,621	\$61,215	\$69,943	\$48,068
60 - 64	297	28	42	58	59	44	38	5	15	8
	\$39,643	\$26,973	\$30,826	\$30,677	\$39,619	\$39,996	\$43,910	\$72,464	\$77,129	\$82,434
65 - 69	117	5	17	18	20	14	29	8	2	4
	\$34,334	\$17,114	\$29,356	\$26,395	\$39,662	\$28,810	\$39,226	\$34,283	\$37,197	\$68,631
70 & over	34	3	5	5	6	5	1	3	3	3
	\$23,479	\$22,612	\$26,012	\$20,442	\$28,877	\$21,529	\$12,726	\$27,941	\$24,113	\$16,131
Unknown	3	3	--	--	--	--	--	--	--	--
	\$6,300	\$6,300	--	--	--	--	--	--	--	--
Total	2,553	684	557	428	363	189	186	78	49	19
	\$37,522	\$28,129	\$33,601	\$36,055	\$43,031	\$43,841	\$49,849	\$60,854	\$67,487	\$61,824

**SECTION 3: Supplemental Information for the Hampden County Regional Retirement System**

**EXHIBIT C**

**Summary Statement of Income and Expenses on an Actuarial Value Basis**

	<b>Year Ended December 31, 2013</b>	<b>Year Ended December 31, 2012</b>
<b>Net assets at actuarial value at the beginning of the year</b>	\$245,703,452	\$244,053,652
<b>Contribution income:</b>		
Employer contributions	\$18,741,959	\$18,273,963
Employee contributions	9,111,120	8,375,821
Other contributions	585	5,288
Less administrative expenses	<u>-668,761</u>	<u>-635,324</u>
Net contribution income	27,184,903	26,019,748
<b>Investment income</b>	<u>24,889,613</u>	<u>4,152,610</u>
<b>Total income available for benefits</b>	\$52,074,516	\$30,172,358
<b>Less benefit payments:</b>		
Pensions	-\$28,584,570	-\$27,138,937
Net 3(8)(c) reimbursements	-1,815,068	-1,292,155
Refunds, annuities, and Option B refunds	-933,525	-888,071
State reimbursements	474,266	781,605
Workers Compensation Settlements	<u>10,950</u>	<u>15,000</u>
Net benefit payments	-\$30,847,947	-\$28,522,558
<b>Change in reserve for future benefits</b>	\$21,226,569	\$1,649,800
<b>Net assets at actuarial value at the end of the year</b>	\$266,930,021	\$245,703,452

**SECTION 3: Supplemental Information for the Hampden County Regional Retirement System**

**EXHIBIT D**

**Development of the Fund Through December 31, 2013**

<b>Year Ended December 31</b>	<b>Employer Contributions</b>	<b>Employee Contributions</b>	<b>Other Contributions</b>	<b>Net Investment Return*</b>	<b>Administrative Expenses</b>	<b>Benefit Payments</b>	<b>Actuarial Value of Assets at End of Year</b>
2007	\$16,469,215	\$7,259,670	\$5,876	\$21,673,615	\$542,399	\$21,815,716	\$241,788,905
2008	9,392,429**	7,693,249	12,145	-43,200,913	617,237	22,537,134	192,531,444
2009	17,676,386	7,732,199	3,357	27,137,711	507,908	23,987,358	220,585,830
2010	15,624,570	8,203,313	191	25,217,369	515,546	25,336,242	243,779,485
2011	18,283,839	8,280,286	5,318	1,630,346	577,214	27,348,407	244,053,652
2012	18,273,963	8,375,821	5,288	4,152,610	635,324	28,522,558	245,703,452
2013	18,741,959	9,111,120	585	24,889,613	668,761	30,847,947	266,930,021

\* Net of investment fees

\*\* Number was adjusted for account receivable reflected in 2007.

**SECTION 3: Supplemental Information for the Hampden County Regional Retirement System**

**EXHIBIT E**

**Table of ERI and Funding Holiday Amortization Bases as of July 1, 2014**

Type	Annual Payment	Years Remaining	Outstanding Balance
2002 ERI	\$141,685	5	\$600,779
2003 ERI	70,945	6	348,474
Funding Holiday	33,492	6	164,511

*Note: Level annual payments assumed to be made on July 1 and December 31.*

### SECTION 3: Supplemental Information for the Hampden County Regional Retirement System

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#### EXHIBIT F

#### Definitions of Pension Terms

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The following list defines certain technical terms for the convenience of the reader:

**Assumptions or actuarial assumptions:**

The estimates on which the cost of the Plan is calculated including:

- (a) Investment return — the rate of investment yield that the Plan will earn over the long-term future;
- (b) Mortality rates — the death rates of employees and pensioners; life expectancy is based on these rates;
- (c) Retirement rates — the rate or probability of retirement at a given age;
- (d) Withdrawal rates — the rates at which employees of various ages are expected to leave employment for reasons other than death, disability, or retirement.

**Normal cost:**

The amount of contributions required to fund the benefit allocated to the current year of service.

**Actuarial accrued liability for actives:**

The value of all projected benefit payments for current members less the portion that will be paid by future normal costs.

**Actuarial accrued liability for pensioners:**

The single-sum value of lifetime benefits to existing pensioners. This sum takes account of life expectancies appropriate to the ages of the pensioners and the interest that the sum is expected to earn before it is entirely paid out in benefits.

**Unfunded actuarial accrued liability:**

The extent to which the actuarial accrued liability of the Plan exceeds the assets of the Plan. There are many approaches to paying off the unfunded actuarial accrued liability, from meeting the interest accrual only to amortizing it over a specific period of time.

### SECTION 3: Supplemental Information for the Hampden County Regional Retirement System

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**Amortization of the unfunded actuarial accrued liability:**

Payments made over a period of years equal in value to the Plan's unfunded actuarial accrued liability.

**Investment return:**

The rate of earnings of the Plan from its investments, including interest, dividends and capital gain and loss adjustments, computed as a percentage of the average value of the fund. For actuarial purposes, the investment return often reflects a smoothing of the capital gains and losses to avoid significant swings in the value of assets from one year to the next.

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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### EXHIBIT I

#### Summary of Actuarial Valuation Results

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The valuation was made with respect to the following data supplied to us:

1. Retired participants as of the valuation date (including 180 beneficiaries in pay status)	1,581
2. Participants active during the year ended December 31, 2013 with total accumulated contributions of \$88,074,094 and projected 2014 payroll of \$100,077,260	2,553
3. Inactive participants with a right to a return of their contributions as of December 31, 2013	349
4. Inactive participants with a vested right to a deferred or immediate benefit as of December 31, 2013	64

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The actuarial factors as of January 1, 2014 are as follows:

1. Normal cost		\$13,453,422
2. Administrative expenses		675,000
3. Expected employee contributions		<u>-8,955,480</u>
4. Employer normal cost: (1) + (2) + (3)		\$5,172,942
5. Actuarial accrued liability		565,522,818
Retired participants and beneficiaries	\$277,866,277	
Active participants	281,700,350	
Inactive participants	5,956,191	
6. Actuarial value of assets (\$279,338,628 at market value as reported on the Annual Statement)		266,930,021
7. Unfunded actuarial accrued liability: (5) – (6)		298,592,797

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The actuarial factors projected to July 1, 2014 are as follows:

1. Employer normal cost projected to July 1, 2014, adjusted for timing	\$5,376,312
2. Projected unfunded actuarial accrued liability	310,127,109
3. Payment on projected unfunded actuarial accrued liability, adjusted for timing	15,977,421
4. Recommended contribution: (1) + (3), adjusted for timing	<u>\$21,373,733</u>
5. Projected payroll	\$102,059,180

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*Note: Recommended contributions are assumed to be paid on July 1 and December 31.*

**SECTION 4: Reporting Information for the Hampden County Regional Retirement System**

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**EXHIBIT II**

**Supplemental Information Required by GASB - History of Employer Contributions**

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<b>Plan Year Ended December 31</b>	<b>Annual Required Contributions (ARC)</b>	<b>Actual Contributions</b>	<b>Percentage Contributed</b>
2007	\$16,469,215	\$16,469,215	100.0%
2008	9,392,429	9,392,429	100.0%
2009	17,676,386	17,676,386	100.0%
2010	15,624,570	15,624,570	100.0%
2011	18,283,839	18,283,839	100.0%
2012	18,273,963	18,273,963	100.0%
2013	18,741,959	18,741,959	100.0%

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**SECTION 4: Reporting Information for the Hampden County Regional Retirement System****EXHIBIT III****Supplemental Information Required by GASB - Schedule of Funding Progress**

<b>Actuarial Valuation Date</b>	<b>Actuarial Value of Assets (a)</b>	<b>Actuarial Accrued Liability (AAL) (b)</b>	<b>Unfunded/ (Overfunded) AAL (UAAL) (b) - (a)</b>	<b>Funded Ratio (a) / (b)</b>	<b>Covered Payroll (c)</b>	<b>UAAL as a Percentage of Covered Payroll [(b) - (a)] / (c)</b>
01/01/2002	\$168,722,805	\$268,661,316	\$99,938,511	62.80%	\$69,512,256	143.77%
01/01/2003	175,587,680	281,630,496	106,042,816	62.35%	68,912,960	153.88%
01/01/2004	187,556,932	294,799,663	107,242,731	63.62%	69,403,424	154.52%
01/01/2005	191,979,825	317,047,443	125,067,618	60.55%	74,555,992	167.75%
01/01/2006	200,497,347	332,139,489	131,642,142	60.37%	77,836,219	169.13%
01/01/2007	218,738,644	354,535,380	135,796,736	61.70%	81,740,364	166.13%
01/01/2008	241,788,905	363,670,449	121,881,544	66.49%	87,000,711	140.09%
01/01/2010	220,585,830	422,756,972	202,171,142	52.18%	91,149,295	221.80%
01/01/2012	244,053,652	499,009,329	254,955,677	48.91%	94,037,543	271.12%
01/01/2014	266,930,021	565,522,818	298,592,797	47.20%	100,077,260	298.36%

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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### EXHIBIT IV

#### Supplementary Information Required by the GASB

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<b>Valuation date</b>	January 1, 2014
<b>Actuarial cost method</b>	Entry Age Normal Cost Method
<b>Amortization method</b>	Level dollar for the 2002 and 2003 ERI and funding holiday liabilities and increasing 4.0% per year for the remaining unfunded liability. Increase in total appropriation is limited to 8.0%.
<b>Remaining amortization period</b>	As of July 1, 2014, 5 years remaining on the 2002 ERI, 6 years remaining on the 2003 ERI and funding holiday, and 22 years for remaining unfunded liability.
<b>Asset valuation method</b>	The difference between the expected return and the actual investment return on a market value basis is recognized over a five-year period. Asset value is adjusted, if necessary to be within 10% of the market value.
<b>Actuarial assumptions:</b>	
Investment rate of return	7.875% (previously, 8.00%)
Projected salary increases	Varies by length of service with ultimate rates of 4.25% for Group 1, 4.50% for Group 2 and 4.75% for Group 4 (previously, 4.50% for Groups 1, 2 and 4)
Cost of living adjustments	3.00% for the first \$18,000 of retirement income
Retired participants and beneficiaries receiving benefits	1,581
Inactive participants entitled to a return of their employee contributions	349
Inactive participants with a vested right to a deferred or immediate benefit	64
Active participants	<u>2,553</u>
Total	4,547

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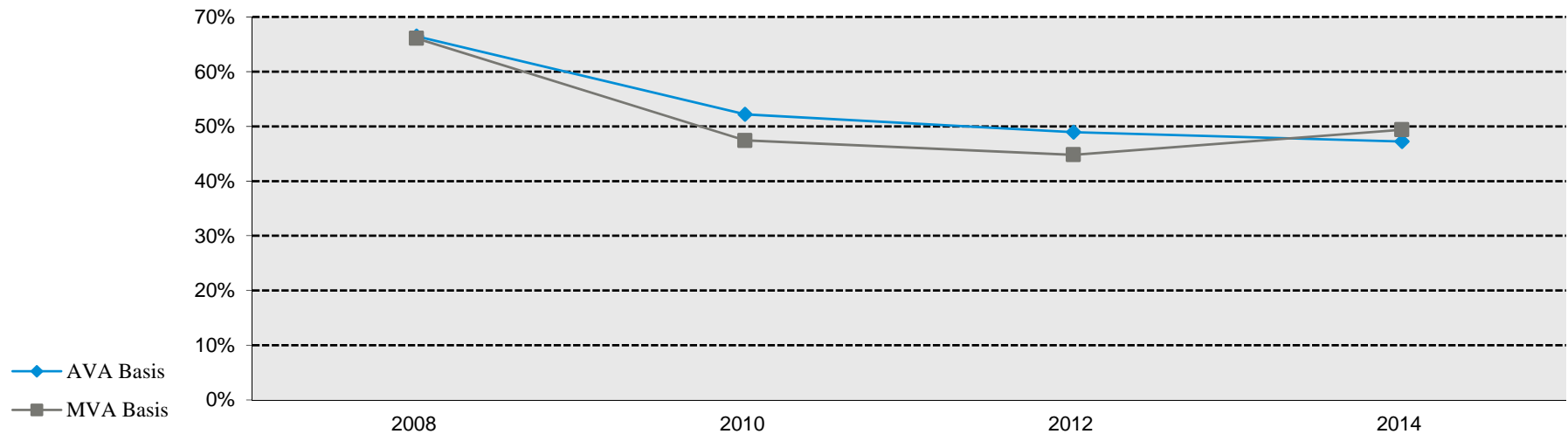
## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

### EXHIBIT V

#### Funded Ratio

A critical piece of information regarding the Plan's financial status is the funded ratio. This ratio compares the actuarial value of assets to the actuarial accrued liabilities of the Plan as calculated. High ratios indicate a well-funded plan with assets sufficient to cover the plan's actuarial accrued liabilities. Lower ratios may indicate recent changes to benefit structures, funding of the plan below actuarial requirements, poor asset performance, or a variety of other factors.

The chart below depicts a history of the funded ratios for this plan. On a market value basis, the funded ratio has increased from 44.81% as of January 1, 2012 to 49.39% as of January 1, 2014. On an actuarial basis, the funded ratio has decreased from 48.91% as of January 1, 2012 to 47.20% as of January 1, 2014.



## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

### EXHIBIT VI

#### Actuarial Assumptions and Actuarial Cost Method

##### Mortality Rates:

*Healthy:*

RP-2000 Combined Healthy Mortality Table projected 20 years with Scale AA  
(Previously, projected 12 years with Scale AA)

*Disabled Retiree:*

RP-2000 Combined Healthy Mortality Table set forward 3 years projected 20 years with Scale AA (Previously, set forward 2 years and no projection)

The RP-2000 Combined Healthy Mortality Table projected 20 years with Scale AA was determined to contain provisions appropriate to reasonably reflect future mortality improvement, based on a review of the mortality experience of the plan.

##### Termination Rates before Retirement:

##### Groups 1 and 2 - Rate (%)

Age	Mortality				Disability
	Current Male	Current Female	Previous Male	Previous Female	
20	0.02	0.01	0.03	0.02	0.01
25	0.03	0.02	0.03	0.02	0.02
30	0.04	0.02	0.04	0.02	0.04
35	0.07	0.04	0.07	0.04	0.06
40	0.09	0.05	0.10	0.06	0.10
45	0.12	0.08	0.13	0.09	0.15
50	0.15	0.12	0.17	0.14	0.19
55	0.25	0.23	0.29	0.25	0.24
60	0.49	0.46	0.56	0.48	0.28

*Notes: 55% of the disability rates shown represent accidental disability.*

*20% of the accidental disabilities will die from the same cause as the disability.*

*55% of the death rates shown represent accidental death.*

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

### Termination Rates before Retirement (continued):

Age	Group 4 – Rate (%)				Disability
	Mortality				
	Current Male	Current Female	Previous Male	Previous Female	
20	0.02	0.01	0.03	0.02	0.10
25	0.03	0.02	0.03	0.02	0.20
30	0.04	0.02	0.04	0.02	0.30
35	0.07	0.04	0.07	0.04	0.30
40	0.09	0.05	0.10	0.06	0.30
45	0.12	0.08	0.13	0.09	1.00
50	0.15	0.12	0.17	0.14	1.25
55	0.25	0.23	0.29	0.25	1.20
60	0.49	0.46	0.56	0.48	0.85

*Notes: 90% of the disability rates shown represent accidental disability.*

*60% of the accidental disabilities will die from the same cause as the disability.*

*90% of the death rates shown represent accidental death.*

#### SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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**Withdrawal Rates:**

Years of Service	Rate per year (%)		Years of Service	Group 4
	Groups 1 and 2			
0	15.0		0 – 10	1.5
1	12.0		11+	0.0
2	10.0			
3	9.0			
4	8.0			
5	7.6			
6	7.5			
7	6.7			
8	6.3			
9	5.9			
10	5.4			
11	5.0			
12	4.6			
13	4.1			
14	3.7			
15	3.3			
16 – 20	2.0			
21 - 29	1.0			
30+	0.0			

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

### Retirement Rates:

Age	Rate per year (%)		
	Groups 1 and 2		Group 4
	Male	Female	
50 – 51	1.0	1.5	2.0
52	1.0	2.0	2.0
53	1.0	2.5	5.0
54	2.0	2.5	7.5
55	2.0	5.5	15.0
56 – 57	2.5	6.5	10.0
58	5.0	6.5	10.0
59	6.5	6.5	15.0
60	12.0	5.0	20.0
61	20.0	13.0	20.0
62	30.0	15.0	25.0
63	25.0	12.5	25.0
64	22.0	18.0	30.0
65	40.0	15.0	100.0
66 - 67	25.0	20.0	--
68	30.0	25.0	--
69	30.0	20.0	--
70	100.0	100.0	--

### Retirement Age for Inactive Vested Participants:

Age 60 (previously, age 65) for Group 1 and Group 2 members and age 55 for Group 4 members hired prior to April 2, 2012. For members hired April 2, 2012 or later, age 60 for Group 1 members, age 55 for Group 2 members and age 50 for Group 4 members.

### Unknown Data for Participants:

Same as those exhibited by participants with similar known characteristics. If not specified, participants are assumed to be male.

#### SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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<b>Inactive Participants:</b>	Call firefighters and reserve police officers are not expected to earn 10 years of creditable service and are included with the inactive participants eligible for a refund of their contributions.  Inactive vested participants with no final average salary reported are assumed to have a liability equal to two times their Annuity Savings Fund balance.
<b>Family Composition:</b>	80% of participants are assumed to be married. None are assumed to have dependent children. Females are assumed to be three years younger than their spouses.
<b>Benefit Election:</b>	All participants are assumed to elect Option A.
<b>Net Investment Return:</b>	7.875% (previously, 8.00%)
<b>Interest on Employee Contributions:</b>	3.5%
<b>Salary Increases:</b>	

<b>Years of Service</b>	<b>Group 1</b>	<b>Group 2</b>	<b>Group 4</b>
0	6.00%	6.00%	7.00%
1	5.50%	5.50%	6.50%
2	5.50%	5.50%	6.00%
3	5.25%	5.25%	5.75%
4	5.25%	5.25%	5.25%
5	4.75%	4.75%	5.25%
6	4.75%	4.75%	4.75%
7	4.50%	4.50%	4.75%
8	4.50%	4.50%	4.75%
9+	4.25%	4.50%	4.75%

*Includes an allowance for inflation of 4.0% per year.  
(Previously, 4.50%)*

<b>Administrative Expenses:</b>	\$675,000 for calendar year 2014, increasing 4.0% per year (previously, \$550,000 for calendar year 2012, increasing 4.5% per year)
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#### SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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<b>2013 Salary:</b>	2013 salaries are equal to salaries provided in the data, except for actives missing salary and employees with less than one year of service, where salaries are calculated from annualized contributions divided by the contribution rates provided.
<b>Total Service:</b>	Total creditable service reported in the data.
<b>Net 3(8)(c) Liability:</b>	No liability is valued for benefits paid to or received from other municipal systems.
<b>Actuarial Value of Assets:</b>	Market value of assets as reported in the System's Annual Statement less unrecognized return in each of the last five years. Unrecognized return is equal to the difference between the actual market value return and the expected market value return and is recognized at 20% per year over a five-year period, further adjusted, if necessary, to be within 10% of the market value.
<b>Actuarial Cost Method:</b>	Entry Age Normal Actuarial Cost Method. Entry Age is the age of the participant less total creditable service. Normal Cost and Actuarial Accrued Liability are calculated on an individual basis and are allocated by salary. Normal Cost is determined by using the plan of benefits applicable to each participant. (Previously, Normal Cost determined as if the current plan of benefits had always been in effect.)
<b>Changes in Assumptions:</b>	<p>This valuation reflects the following:</p> <ul style="list-style-type: none"><li>➤ The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.</li><li>➤ The investment return assumption was lowered from 8.00% to 7.875%.</li><li>➤ The salary increase assumption was revised from level rates of 4.50% per year for all members to rates based on years of service with ultimate rates of 4.25% per year for Group 1 members, 4.5% per year for Group 2 members and 4.75% per year for Group 4 members.</li><li>➤ The mortality assumption for non-disabled participants was changed from the RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table projected 20 years using Scale AA.</li><li>➤ The mortality assumption for disabled participants was changed from the RP-2000 Combined Healthy Mortality Table set forward two years to the RP-2000 Combined Healthy Mortality Table set forward three years projected 20 years with Scale AA.</li></ul>

#### SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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- The assumed retirement age for inactive vested participants hired prior to April 2, 2012 was changed from age 65 to age 60 for Group 1 and 2 members and remained the same at age 55 for Group 4 members hired prior to April 2, 2012. For participants hired April 2, 2012 or later, the assumption is 60 for Group 1, 55 for Group 2, and 50 for Group 4.
- The administrative expense assumption was increased from \$550,000 for calendar 2012 to \$675,000 for calendar 2014.

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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### EXHIBIT VII

#### Summary of Plan Provisions

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This exhibit summarizes the major provisions of Chapter 32 of the Laws of Massachusetts.

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**Plan Year:** January 1 – December 31

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#### Retirement Benefits

Employees covered by the Contributory Retirement Law are classified into one of four groups depending on job classification. Group 1 comprises most positions in state and local government. It is the general category of public employees. Group 4 comprises mainly police and firefighters. Group 2 is for other specified hazardous occupations. (Officers and inspectors of the State Police are classified as Group 3.)

For employees hired prior to April 2, 2012, the annual amount of the retirement allowance is based on the member's final three-year average salary multiplied by the number of years and full months of creditable service at the time of retirement and multiplied by a percentage according to the following table based on the age of the member at retirement:

#### Age Last Birthday at Date of Retirement

Percent	Group 1	Group 2	Group 4
2.5	65 or over	60 or over	55 or over
2.4	64	59	54
2.3	63	58	53
2.2	62	57	52
2.1	61	56	51
2.0	60	55	50
1.9	59	--	49
1.8	58	--	48
1.7	57	--	47
1.6	56	--	46
1.5	55	--	45

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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A member's final three-year average salary is defined as the greater of the highest consecutive three-year average annual rate of regular compensation and the average annual rate of regular compensation received during the last three years of creditable service prior to retirement.

For employees hired on April 2, 2012 or later, the annual amount of the retirement allowance is based on the member's final five-year average salary multiplied by the number of years and full months of creditable service at the time of retirement and multiplied by a percentage according to the following tables based on the age and years of creditable service of the member at retirement:

**For members with less than 30 years of creditable service:**

**Age Last Birthday at Date of Retirement**

Percent	Group 1	Group 2	Group 4
2.50	67 or over	62 or over	57 or over
2.35	66	61	56
2.20	65	60	55
2.05	64	59	54
1.90	63	58	53
1.75	62	57	52
1.60	61	56	51
1.45	60	55	50

**For members with 30 years of creditable service or greater:**

**Age Last Birthday at Date of Retirement**

Percent	Group 1	Group 2	Group 4
2.500	67 or over	62 or over	57 or over
2.375	66	61	56
2.250	65	60	55
2.125	64	59	54
2.000	63	58	53
1.875	62	57	52
1.750	61	56	51
1.625	60	55	50

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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A member's final five-year average salary is defined as the greater of the highest consecutive five-year average annual rate of regular compensation and the average annual rate of regular compensation received during the last five years of creditable service prior to retirement.

For employees who became members after January 1, 2011, regular compensation is limited to 64% of the federal limit found in 26 U.S.C. 401(a)(17). In addition, regular compensation for members who retire after April 2, 2012 will be limited to prohibit "spiking" of a member's salary to increase the retirement benefit.

For all employees, the maximum annual amount of the retirement allowance is 80 percent of the member's final average salary. Any member who is a veteran also receives an additional yearly retirement allowance of \$15 per year of creditable service, not exceeding \$300. The veteran allowance is paid in addition to the 80 percent maximum.

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### Employee Contributions

Date of Hire	Contribution Rate
Prior to January 1, 1975	5%
January 1, 1975 – December 31, 1983	7%
January 1, 1984 – June 30, 1996	8%
July 1, 1996 onward	9%

In addition, employees hired after December 31, 1978 contribute an additional 2 percent of salary in excess of \$30,000.

Employees hired after 1983 who voluntarily withdraw their contributions with less than 10 ten years of credited service receive 3% interest on their contributions.

Employees in Group 1 hired on or after April 2, 2012 with 30 years of creditable service or greater will pay a base contribution rate of 6%.

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### Retirement Benefits (Superannuation)

Members of Group 1, 2 or 4 hired prior to April 2, 2012 may retire upon the attainment of age 55. For retirement at ages below 55, twenty years of creditable service is required.

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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Members hired prior to April 2, 2012 who terminate before age 55 with ten or more years of creditable service are eligible for a retirement allowance upon the attainment of age 55 (provided they have not withdrawn their accumulated deductions from the Annuity Savings Fund of the System).

Members of Group 1 hired April 2, 2012 or later may retire upon the attainment of age 60. Members of Group 2 or 4 hired April 2, 2012 or later may retire upon the attainment of age 55. Members of Group 4 may retire upon attainment of age 50 with ten years of creditable service.

Members hired April 2, 2012 or later who terminate before age 55 (60 for members of Group 1) with ten or more years of creditable service are eligible for a retirement allowance upon the attainment of age 55 (60 for members of Group 1) provided they have not withdrawn their accumulated deductions from the Annuity Savings Fund of the System.

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### Ordinary Disability Benefits

A member who is unable to perform his or her job due to a non-occupational disability will receive a retirement allowance if he or she has ten or more years of creditable service and has not reached age 55. The annual amount of such allowance shall be determined as if the member retired for superannuation at age 55 (age 60 for Group 1 members hired on or after April 2, 2012), based on the amount of creditable service at the date of disability. For veterans, there is a minimum benefit of 50 percent of the member's most recent year's pay plus an annuity based on his or her own contributions.

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### Accidental Disability Benefit

For a job-connected disability, the benefit is 72 percent of the member's most recent annual pay plus an annuity based on his or her own contributions, plus additional amounts for surviving children. Benefits are capped at 75 percent of annual rate of regular compensation for employees who become members after January 1, 1988.

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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### Death Benefits

In general, the beneficiary of an employee who dies in active service will receive a refund of the employee's own contributions. Alternatively, if the employee were eligible to retire on the date of death, a spouse's benefit will be paid equal to the amount the employee would have received under Option C. The surviving spouse of a member who dies with two or more years of credited service has the option of a refund of the employee's contributions or a monthly benefit regardless of eligibility to retire, if they were married for at least one year. There is also a minimum widow's pension of \$750 per month, and there are additional amounts for surviving children.

If an employee's death is job-connected, the spouse will receive 72 percent of the member's most recent annual pay, in addition to a refund of the member's accumulated deductions, plus additional amounts for surviving children. However, in accordance with Section 100 of Chapter 32, the surviving spouse of a police officer, firefighter or corrections officer is killed in the line of duty will be eligible to receive an annual benefit equal to the maximum salary held by the member at the time of death.

Upon the death of a job-connected disability retiree who retired prior to November 7, 1996 and could not elect an Option C benefit, a surviving spouse will receive an allowance of \$9,000 per year if the member dies for a reason unrelated to cause of disability.

### "Heart And Lung Law" And Cancer Presumption

Any case of hypertension or heart disease resulting in total or partial disability or death to a uniformed fireman, permanent member of a police department, or certain employees of a county correctional facility is presumed to have been suffered in the line of duty, unless the contrary is shown by competent evidence. Any case of disease of the lungs or respiratory tract resulting in total disability or death to a uniformed fireman is presumed to have been suffered in the line of duty, unless the contrary is shown by competent evidence. There is an additional presumption for uniformed firemen that certain types of cancer are job-related if onset occurs while actively employed or within five years of retirement.

## SECTION 4: Reporting Information for the Hampden County Regional Retirement System

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### Options

Members may elect to receive a full retirement allowance payable for life under Option A. Under Option B a member may elect to receive a lower monthly allowance in exchange for a guarantee that at the time of death any contributions not expended for annuity payments will be refunded to the beneficiary. Option C allows the member to take a lesser retirement allowance in exchange for providing a survivor with two-thirds of the lesser amount. Option C pensioners will have benefits converted from a reduced to a full retirement if the beneficiary predeceases the retiree.

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### Post-Retirement Benefits

The Board has adopted the provisions of Section 51 of Chapter 127 of the Acts of 1999, which provide that the Retirement Board may approve an annual COLA in excess of the Consumer Price Index but not to exceed a 3% COLA on the first \$18,000 of a retirement allowance. Cost-of-living increases granted prior to July 1, 1998 are reimbursed by the Commonwealth and not reflected in this report.

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### Changes in Plan Provisions

Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by of Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.

## SECTION 5: GASB 67/68 Information for the Hampden County Regional Retirement System

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### EXHIBIT 1

#### Net Pension Liability

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The components of the net pension liability of the Hampden County Regional Retirement System at December 31, 2013 were as follows:

Total pension liability	\$565,522,818
Plan fiduciary net position	279,338,628
System's net pension liability	286,184,190
Plan fiduciary net position as a percentage of the total pension liability	49.39%

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*Actuarial assumptions.* The total pension liability was determined by an actuarial valuation as of December 31, 2013, using the following actuarial assumptions, applied to all periods included in the measurement:

Inflation	4.00%
Salary increases	Varies by length of service with ultimate rates of 4.25% for Group 1, 4.50% for Group 2 and 4.75% for Group 4
Investment rate of return	7.875%, net of pension plan investment expense, including inflation
Cost of Living Adjustments	3% of first \$18,000
Healthy:	RP-2000 Combined Healthy Mortality Table projected 20 years with Scale AA
Disabled Retiree:	RP-2000 Combined Healthy Mortality Table set forward three years projected 20 years with Scale AA

The long-term expected rate of return on pension plan investments was determined using a building-block method in which best-estimate ranges of expected future real rates of return (expected returns, net of pension plan investment expense and inflation) are developed for each major asset class. These ranges are combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates of arithmetic real rates of return for each major asset class included in the pension plan's target asset allocation as of December 31, 2013 are summarized in the following table:

## SECTION 5: GASB 67/68 Information for the Hampden County Regional Retirement System

Asset Class	Long-Term Expected Real Rate of Return
Domestic equity	6.60%
International developed markets equity	7.10%
International emerging markets equity	9.40%
Core fixed income	2.20%
High-yield fixed income	4.70%
Real estate	4.40%
Commodities	4.40%
Hedge fund, GTAA, Risk parity	3.90%
Private equity	11.70%
Cash	1.80%

*Discount rate:* The discount rate used to measure the total pension liability was 7.875%. The projection of cash flows used to determine the discount rate assumed plan member contributions will be made at the current contribution rate and that Hampden County Regional Retirement System contributions will be made at rates equal to the actuarially determined contribution rates. Based on those assumptions, the pension plan's fiduciary net position was projected to be available to make all projected future benefit payments of current plan members. Therefore, the long-term expected rate of return on pension plan investments was applied to all periods of projected benefit payments to determine the total pension liability.

*Sensitivity of the net pension liability to changes in the discount rate.* The following presents the net pension liability of the Hampden County Regional Retirement System, calculated using the discount rate of 7.875%, as well as what the Hampden County Regional Retirement System's net pension liability would be if it were calculated using a discount rate that is 1-percentage-point lower (6.875%) or 1-percentage-point higher (8.875%) than the current rate:

	1% Decrease (6.875%)	Current Discount (7.875%)	1% Increase (8.875%)
Hampden County Regional Retirement System's net pension liability as of December 31, 2013	\$348,877,187	\$286,184,190	\$232,787,173

## SECTION 5: GASB 67/68 Information for the Hampden County Regional Retirement System

### EXHIBIT 2

#### Pension Expense and Deferred Outflows/Inflows of Resources Related to Pensions

##### A. Pension expense for the year ended June 30, 2015

Service cost	\$13,453,422
Interest	--
Recognized portion of current-period difference between expected and actual experience	--
Contributions – employee	--
Projected earnings on pension plan investments	--
Recognized portion of current-period difference between projected and actual earnings on pension plan investments	--
Recognition of deferred outflows of resources	--
Recognition of deferred inflows of resources	--
Pension expense for fiscal year ended June 30, 2015	To be determined

##### B. Deferred outflows/inflows of resources related to pensions

	Deferred Outflows of Resources	Deferred Inflows of Resources
Differences between expected and actual experience	--	--
Changes of assumptions	--	--
Changes of benefit terms	--	--
Net difference between projected and actual earnings on pension plan investments	--	--
Total	To be determined	To be determined

##### C. Projected recognition of deferred outflows/(inflows)

	Year Ended June 30,	Recognition
	2016	--
	2017	--
	2018	--
	2019	--
	2020	--
	Thereafter	--

*Note: Entry Age Normal liabilities calculated using ages and service amounts as of January 1, 2014 are used to measure the pension expense for fiscal year ended June 30, 2015.*

## SECTION 5: GASB 67/68 Information for the Hampden County Regional Retirement System

### EXHIBIT 3

#### Schedule of Changes in the Net Pension Liability – Last Ten Years

	Year End December 31,									
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
<b>Total pension liability</b>										
Service cost	\$13,453,422									
Interest	--									
Differences between expected and actual experience	--									
Changes of assumptions	--									
Changes of benefit terms	--									
Benefit payments, including refunds of employee contributions	--									
<b>Net change in total pension liability</b>	TBD									
<b>Total pension liability - beginning</b>	565,522,818									
<b>Total pension liability - ending (a)</b>	TBD									
<b>Plan fiduciary net position</b>										
Contributions - employer	--									
Contributions - employee	--									
Net investment income	--									
Benefit payments, including refunds of employee contributions	--									
Other	--									
<b>Net change in fiduciary net position</b>	TBD									
<b>Plan fiduciary net position - beginning</b>	279,338,628									
<b>Plan fiduciary net position - ending (b)</b>	TBD									
<b>Net pension liability – ending: (a)-(b)</b>	TBD									
<b>Plan's fiduciary net position as a percentage of the total pension liability</b>	TBD									
<b>Covered-employee payroll</b>	\$100,077,260									
<b>Net pension liability as a percentage of covered-employee payroll</b>	TBD									

\*Covered-employee payroll as reported in the January 1, 2014 funding valuation report

## SECTION 5: GASB 67/68 Information for the Hampden County Regional Retirement System

### EXHIBIT 4

#### Schedule of Contributions – Last Ten Years

	Year End December 31,									
	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005
Actuarially determined contribution*	\$21,373,733									
Contributions in relation to the actuarially determined contribution	TBD									
Contribution deficiency (excess)	TBD									
Covered-employee payroll	\$100,077,260									
Contributions as a percentage of covered-employee payroll	21.36%									

(Historical information prior to implementation of GASB 67/68 is not required)

\* Based on the results of the January 1, 2012 actuarial valuation (including assumptions and methods) which determined budgeted appropriation for fiscal 2015.

## SECTION 5: GASB Information for Hampden County Regional Retirement System

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### EXHIBIT 5

#### Notes to Required Supplementary Information

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<b>Valuation date</b>	Actuarial determined contribution rates are calculated as of January 1 two years prior to the end of the employer's fiscal year in which contributions are reported.
<b>Actuarial cost method</b>	Entry Age Normal Cost Method
<b>Amortization method</b>	Level dollar for the 2002 and 2003 ERI and funding holiday liabilities and increasing 4.0% per year for the remaining unfunded liability. Increase in total appropriation is limited to 8.0%.
<b>Remaining amortization period</b>	As of July 1, 2014, 5 years remaining on the 2002 ERI, 6 years remaining on the 2003 ERI and funding holiday, and 22 years for remaining unfunded liability.
<b>Asset valuation method</b>	The difference between the expected return and the actual investment return on a market value basis is recognized over a five-year period. Asset value is adjusted, if necessary to be within 10% of the market value.

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<b>Actuarial assumptions:</b>	
Investment rate of return	7.875% (previously, 8.00%)
Discount rate	7.875% (previously, 8.00%)
Inflation rate	4.00%
Projected salary increases	Varies by length of service with ultimate rates of 4.25% for Group 1, 4.50% for Group 2 and 4.75% for Group 4
Cost of living adjustments	3.00% of first \$18,000 of retirement income

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<b>Plan membership:</b>	
Retired participants and beneficiaries receiving benefits	1,581
Inactive participants entitled to a return of their employee contributions	349
Inactive participants with a vested right to a deferred or immediate benefit	64
Active participants	<u>2,553</u>
Total	4,547

## SECTION 5: GASB Information for Hampden County Regional Retirement System

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### Changes in Assumptions:

The actuarial cost method was changed to better reflect the impact of the plan changes effective for employees hired on or after April 2, 2012.

The investment return assumption was lowered from 8.00% to 7.875%.

The salary increase assumption was revised from level rates of 4.50% per year for all members to rates based on years of service with ultimate rates of 4.25% per year for Group 1 members, 4.5% per year for Group 2 members and 4.75% per year for Group 4 members.

The mortality assumption for non-disabled participants was changed from the RP-2000 Combined Healthy Mortality Table projected 12 years with Scale AA to the RP-2000 Combined Healthy Mortality Table projected 20 years using Scale AA.

The mortality assumption for disabled participants was changed from the RP-2000 Combined Healthy Mortality Table set forward two years to the RP-2000 Combined Healthy Mortality Table set forward three years projected 20 years with Scale AA.

The assumed retirement age for inactive vested participants hired prior to April 2, 2012 was changed from age 65 to age 60 for Group 1 and 2 members and remained the same at age 55 for Group 4 members hired prior to April 2, 2012. For participants hired April 2, 2012 or later, the assumption is 60 for Group 1, 55 for Group 2, and 50 for Group 4.

The administrative expense assumption was increased from \$550,000 for calendar 2012 to \$675,000 for calendar 2014.

### Changes in Plan Provisions:

Members hired on or after April 2, 2012 are covered by the provisions of Chapter 32 as amended by Chapter 176 of the Acts of 2011 and Chapter 139 of the Acts of 2012.

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